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ISTS Newsletter

Iowa Academy of Science

9-2013

ISTS, September 2013

Iowa Academy of Science

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ISTS

It's Fall Conference Time -- Have YOU registered?

Nadine Weirather, Editor

September, 2013

Notes and News

ISTS Chair, De Anna Tibben - Info on Fall Conference

Page 1

Opportunities

- * Eric Hall Message
- * Meet Chair-Elect Kelen Panec
- * Upper Mississippi Field trip
- * Yvette McCully News
- * CK-12
- * eii
- * Yager Award
- *

Page 2-4

Opportunities

- * ExploraVison
- * Shell Science Lab
- * Other Contests
- * Sunday at the Quarry
- * World Water Monitoring
- * Other Opportunities

Page 4-7

Opportunities

- * Energy Resources
- * Online Science Fair
- * Blank Park Zoo
- * NGSS App
- * World of 7 Billion
- * NOVA/PBS
- * NASA SpacePlace

Page 8-11

Iowa Academy of Science Mission

- * Promote scientific research and dissemination
- * Improve instruction in the sciences
- * Promote public understanding of science
- * Recognize excellence in science and science teaching

ISTS Leadership

Your Leadership team can be found at <http://ists.pls.uni.edu/officers.html>.

We are always looking for good people. Send a line to eric.hall@dmschools.org if you would like to be more involved.

ICTM - ISTS Fall Conference

Plan on a fun time of renewal and learning in Ames on October 22-23.

Working Together: Making Connections between Math & Science

Our 2013 Fall Conference title says it all! ISTS is teaming up with ICTM to create the most relevant, the most effective, and the most inspiring Fall Conference ever!!! The Fall Conference will provide both science AND math teachers across our state with the latest information on technology, pedagogy, and experiences for students! I promise you will come away feeling inspired, motivated, and most importantly equipped to help your students become math & science literate! Registration is open! <http://www.ictm-ists-conference.org/>

Some highlights I'd like to mention...

We're going GREEN!!!! The program will not be printed this year. Be sure to bring your "smart" device to take advantage of the wireless interactions throughout the Conference. Don't have a "smart" device? Don't worry! We'll have stations and opportunities for you to download the information to take home with you. Print the advance program, or use the signage around the Conference.

TWO Luncheon Speakers Check out the advance program for details!

ISTS Keynote: Robert & Michelle Root-Bernstein: *Sparks of Genius, The 13 Thinking Tools of the World's Most Creative People, a study of imaginative skills used by creators of all kinds. Together they write, consult and lead workshops on imaginative thinking, polymathy and trans-disciplinary education. Now in its ninth paperback printing in the U.S., it is a stalwart among parents, teachers and professionals focused on understanding and exercising the creative imagination.*

Sparks of Genius will be available as an eBook in 2013

ICTM Keynote: Zalman P. Usiskin *The words "understand", "understanding", and their plurals appear over 250 times in the Common Core. With so many appearances, it is not surprising that these words are used in a broad variety of ways, a variety that goes far beyond skills. Furthermore, even when the word "understand" is not used, some understanding is implied. In this talk, a framework is offered to help teachers deal with this variety.*

Round Table Discussions Between luncheon times, there will be an opportunity for you to share with colleagues. These replace the ISTS Breakfast sessions and continue the ICTM tradition.

"Working Together" with you,
De Anna Tibben
2013 Fall Conference Chair ISTS



Finally...STEM PD We Can Use!

Preparing students to enter STEM fields after high school requires more than just a knowledgeable classroom teacher. Teachers – now, more than ever – are being asked to prepare students for jobs that require skills and problem solving beyond the standard curriculum. So, what can we do? Engaging with local business and industry partners is one way to bring perspective to the work we do in science and math classes.

Science teachers across the state have an exciting opportunity this fall. ISTS leadership, in cooperation with regional STEM hub managers, are inviting you to be a part of a professional development course that will help bridge the gap between WANTING to create industry partnerships in your area and actually DOING it. We recognize the time teachers have is taken up by many, many obligations, so this focused course is designed to teach you the strategies necessary to create meaningful partnerships with local business and industry in your area.

Using a collaborative learning model, teachers who show interest in being a part of this professional development course will be supported through the entire process of engaging a local industry partner and maintaining a meaningful relationship during the 2013-14 school year. Interested

teachers will be provided with tools to help their students and industry partners make the most of their newly-created Powerful Partnership.

Participants can opt for 1.0 license renewal credit through Heartland AEA or 1.0 graduate credit from Drake University, are required to attend/participate in 1) the ICTM-ISTSFall Conference on October 23rd, 2) two face-to-face meetings and 3) two online webinars. All meetings will take place outside of the work day and 100% attendance (in-person or virtual) is required.

Sound like something you'd like to be a part of? Preliminary registration is happening now! Spots are limited to 5 teachers per STEM hub region, so use this link to sign up now: <http://goo.gl/LiimFS>

For more information email Eric Hall at eric.hall@dmschools.org.

*Come to the Fall
Conference and
bring all your math
and science friends.
It is all new and
exciting in 2013.
October 22-23*



ISTS Chair Elect

Greetings from Red Oak, Iowa. I am Kelen Panec, the incoming ISTS chair-elect. This is my second year teaching at Red Oak High school, after having taught at Waterloo West High for 7 years and Waterloo Central Middle School for 8 years and also in Nebraska, Texas and Oklahoma. I have been involved with ISTS and the Iowa Academy of Science for 17 years. One of my favorite "jobs" with the Academy has been working with the Student Program Committee and the Junior Academy of Science. I have attended nearly every ISTS Fall conference in my years of teaching in Iowa, having been a presenter at several.

I am looking forward to being able to work more closely with the ISTS and the Academy for the next few years. As we begin working with the Iowa Council of Teachers of Mathematics in planning our Fall Conference, new avenues should open up for our membership. It looks to be an exciting time to be a science or math teacher in Iowa.

UPPER MISSISSIPPI RIVER CONSERVATION FIELD TRIP GRANT

The Upper Mississippi River Conservation Committee (UMRCC) Field Trip Fund program is a grant initiative designed to help schools in Minnesota, Wisconsin, Iowa, Illinois and Missouri fund field trips to the Mississippi River. Field trips must engage students in learning about the Mississippi River's fish, forest, wildlife and natural habitats and their conservation. These learning experiences should support science and other academic concepts being taught in the classroom. Field trips must be along the Upper Mississippi River System.

Maximum Grant Amount

\$250 per application. Teachers may only apply for one per year. Awards will be made on a first-requested, first-awarded basis for eligible applications until available grant funds have been awarded. Two grants per state will be made each year.

Eligible Applicants

Eligible applicants are teachers conducting field trips to the Upper Mississippi River System which includes the Mississippi River and Illinois River. Those teachers who have attended the UMRCC sponsored "Exploration of the Mississippi River -A Workshop for Teachers" and/or other river related teacher workshops will receive priority. If a formal river related teacher workshop has not been held in your part of the river, experience working with educators from state and federal agencies to learn more about Mississippi River fish and wildlife, will suffice. Please provide the agency representative's name and contact information.

Application Process

Grant application is attached. Submit completed grant applications to UMRCC Coordinator Scott Yess at scott_yess@fws.gov. **Applications will be accepted between Aug. 1 and Nov 30.**

Eligibility Criteria for Grant Funding

- Grant request is for field trip related costs.
- Field trip mileage does not exceed 100 miles each way (200 miles round trip).
- A minimum of 20 students are planned to attend the field trip.

Contemplations from the State Department

Questions to Consider When Adopting Standards - by Yvette McCully

When considering adopting new standards, there are several key questions that should be considered about the standards themselves.

- Are the standards supported by current research?
- Is the standards structure useful and clear to districts, teachers, curriculum directors, and/or assessment developers?
- Are the standards clear on what content a student is expected to master? What about application of that content?
- Does the structure of the standards easily allow for integration of scientific practices and content by teachers or assessment developers?
- Do the standards appear to be rigorous? Why or why not?
- Is there a clear learning progression between the grade levels?

The following chart shows a high level overview of the main features of the Iowa Core and the NGSS.



Iowa Core in Science	Next Generation Science Standards
<ul style="list-style-type: none"> • Essential Concept Statements that all start with "Understand and apply" • MS standards have subtopic sentences to provide additional details • HS standards have bullets describing underlying principles to provide additional details • Science as Inquiry Standards separate from Content standards • Same essential concept statement for MS and HS on physical science forces and motion topic • Based off of research that is over 10 years old 	<ul style="list-style-type: none"> • Performance Expectations (PEs) that describe what a student should be able to do to demonstrate knowledge on a core idea – Application of knowledge to show comprehension • PEs describe the evidence that students have to render to be considered proficient • Clarification Statements and Assessment Boundaries provide additional details • Scientific and Engineering Practice integrated with Disciplinary Core Idea (content) and Crosscutting concept in each PE • PEs build upon each other from MS to HS to show learning progression • Based off of current research by the National Research Council



CK-12 Foundation News

Free Access to K-12 Science Resources

by Richard Jones

The [CK-12 Foundation](#) in Palo Alto, CA is striving to provide free access to high-quality K-12 Science resources for Anybody, anywhere, on any device.

CK-12 provides: ***Free** digital Flexbooks (standards-aligned, flexible, digital textbooks) and concepts for Science subjects ranging from [Earth Sciences](#) to physics *Fully customizable Science content - add, remove, rearrange, or create new content *Science content presented in multiple modalities: text, exercises, quizzes, interactives, simulations etc...

All content is available online, in print, and/or on any device (iPads, Android tablets, Kindles, etc.)

[Check out the cK-12 Tutorial Center to learn more!](#)

From the NESTA E-News, August, 2013

eii - Professional Development

Environmental Issues Instruction (eii) and Upper Iowa University are offering a professional development opportunity for teachers during the 2013-2-14 academic year. The theme is Preserving and Protecting Our Water Resources. Teachers will experience a plethora of instructional activities to assist them in teaching an interdisciplinary unit to their students. All activities are aligned with standards in the Common Core and Iowa Core, Next Generation Science Standards, 7 Cross-Cutting Concepts of the Framework for K-12 Science Education and STEM-Science, Technology, Engineering, and Math. Teachers from Pre-K-12 in all content areas are invited to participate in this graduate level course. For a registration fee of \$198 the teachers will receive: two graduate credits from UIU, a myriad of materials to teach the unit, plus lodging and food. Grants from REAP-CEP and LRTF make these workshops possible. The dates and location are: Pleasant Hill Sleep Inn Nov. 8-10, 2013 and April 4-5, 2014 OR Mt. Vernon Sleep Inn Feb. 21-23, 2013 and April 25-26, 2014. You may register on our website: <http://www.uiu.edu/eii> Please email me if you would like more information.

The Iowa Children's Museum Announces the Robert E. Yager Active Learning Award

Many excellent educators in our community dedicate themselves to facilitating active learning in their classrooms, providing students opportunities to become engaged learners, innovative thinkers, and creative problem-solvers. In recognition of this strength in our educational community, The Iowa Children's Museum is honoring four outstanding local educators with the Robert E. Yager Active Learning Award. Nominations are due by September 29. Learn more by clicking the link below.

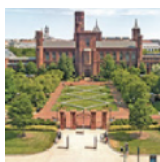
<https://www.theicm.org/get-involved/active-learning-award>

See you in Ames
on October
22-23, 2013
as we coordinate
with the math
teachers to raise
student
achievement!!
ISTS-ICTM

Toshiba/NSTA ExploraVision

ExploraVision is a competition that encourages K-12 students of all interest, skill and ability levels to create and explore a vision of a future technology by combining their imaginations with the tools of science. Teams of two to four students research scientific principles and current technologies as the basis for designing innovative technologies that could exist in 20 years. Students compete for up to \$240,000 in savings bonds (maturity value) for college and cool gifts from Toshiba. First- and second-place teams also receive an expenses-paid trip with their families, mentor and coach to Washington, D.C. for a gala awards weekend in June 2014.

Applications are now being accepted; the deadline for applications is **January 30, 2014**. For more information about the program or to learn how to apply, visit the competition [website](#).



Smithsonian Museum Day

In the spirit of the Smithsonian Museums, who offer free admission everyday, [Museum Day Live!](#) is an annual event hosted by Smithsonian magazine in which participating museums across the country open their doors to anyone presenting a Museum Day Ticket...for free! [View the list of 2013 participating museums!](#) Tickets are good for Saturday, September 28, 2013, and a ticket is good for the ticket holder and a guest.

eCYBERMISSION

eCYBERMISSION is a free, online collaborative learning competition for students in grades six through nine offered by the U.S. Army Educational Outreach Program (AEOP). Sponsored by the U.S. Army and administered by NSTA, eCYBERMISSION is one of several science, technology, engineering and math (STEM). The competition challenges students to think about real-world applications of STEM by working in teams to identify a problem in their community and use the scientific practices or the engineering design process to find a solution. Students compete for state, regional and national awards, with potential winning of up to \$8,000 (maturity value) in U.S. savings bonds.

Registration for the competition is now open. Students registered by November 1st will receive a Free STEM Research Kit. All registered teachers will receive an eCYBERMISSION Starter Kit, which includes lessons, resources and tools available to introduce the competition in the classroom. To learn more about the eCYBERMISSION program and to register, click [here](#) or via email at missioncontrol@ecybermission.com.

America's Home Energy Education Challenge

America's Home Energy Education Challenge (AHEEC) is a national student competition, created to help families save money by saving energy at home. AHEEC engages students in elementary and middle schools to make smarter energy choices that

reduce U.S. reliance on fossil fuels and put money back in their parents' pockets. This initiative aims to educate America's youth about the benefits of energy efficiency, motivate students to play a more active role in how their families use energy, and help families across the country reduce their energy bills. Participating schools and organizations compete for more than \$50,000 in prizes that will be distributed at the regional and national levels of the competition.

Official registration for the Challenge ends **November 15, 2013**. To register to join America's Home Energy Education Challenge or to find more information about the competition click [here](#).

Shell Science Lab Challenge

The Shell Science Lab Challenge, sponsored by Shell Oil Company (Shell) and administered by NSTA, encourages teachers (grades 6-12) in the U.S. and Canada, who have found innovative ways to deliver quality lab experiences with limited school and laboratory resources, to share their approaches for a chance to win up to \$93,000 in prizes, including a grand prize school science lab makeover support package valued at \$20,000.



The deadline for submissions is **December 20, 2013**. For more information about the Challenge or to download an application, click [here](#).



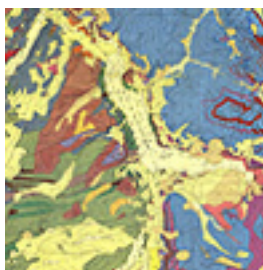
Sunday At the Quarry

As part of Earth Science Week Activities, BMC Aggregates along with the Earth Science Department at the University of Northern Iowa will sponsor the "SUNDAY AT THE QUARRY," event to be held on October 6th, from 11 AM-4PM, at the BMC Aggregates Raymond Quarry facility located just east of Raymond, Iowa, on old Hy 20 (6900 Dubuque Rd). Our theme this year is "Our Resourceful Earth."

Program presentations include special presentations from the Iowa Flood Center, presenting programs related to local flooding issues, floodplain designations, and efforts for flood control along with special presentations from the soil and water conservation districts relating to the nutrient management strategies and water quality initiatives.

Other presentations include UNI Earth Science Department, Iowa Geological Survey, IOWATER, Black Hawk County Soil and Water Conservation Watershed Program, Black Hawk Gem and Mineral Society, City of Waterloo, and Iowa Learning Farms. Programs will be for young and old, the general public and everyone interested in the Earth Sciences. Everyone will have the opportunity to do rock, fossil, and mineral collecting with the Gem and Mineral Society and do a Geology Tour of the Quarry.

BMC Aggregates will again supply area educators with the Earth Science Week Tool Kits produced by the American Geological Institute. They are at no charge and include posters, activities, and subject matter CDs. Contact the BMC Aggregates Elk Run Heights office at 319 235 6583.



Geologic Map Day

On Friday, October 18, 2013, you are invited to join in the celebration of the second annual Geologic Map Day! Geologic Map Day will promote awareness of the study, uses, and importance of geologic mapping for education, science, business, and a variety of public policy concerns.

The event will enable students, teachers, and the wider public to tap into educational activities, print materials, access online resources, and explore other opportunities for participation. Check out the Geologic Map Day poster included in the Earth Science Week 2013 Toolkit (<http://www.agiweb.org/pubs/pubdetail.html?item=609610>).

The poster provides a geologic map, plus step-by-step instructions for a related classroom activity, encouraging students to explore what geologic maps can tell them about natural hazards. Additional resources for learning about geologic maps can be found on the new Geologic Map Day web page (<http://www.earthsciweek.org/geologicmap/>).

From the NESTA E-News, September, 2013



NASA Night Rover Energy Challenge

Registration is open for teams seeking to compete in the \$1.5 million energy storage competition known as the Night Rover Challenge, sponsored by NASA and the Cleantech Open. Teams must demonstrate a stored energy system that can power a simulated solar-powered exploration vehicle that can operate through multiple cycles of daylight and extended periods of darkness.

"The goal of the Night Rover Challenge is to stimulate innovations in energy storage technologies of value in extreme space environments, such as the surface of the moon, or for electric vehicles and renewable energy systems here on Earth," said Michael Gazarik, NASA's associate administrator for Space Technology at NASA Headquarters in Washington.

For information about the Night Rover Challenge or to register a team, visit: <http://www.nightrover.org>. Registration closes October 25, 2013. Trials will begin in January 2014.

From the NESTA E-News, September, 2013



Junior Paleontologists

Encourage Your Students To Be Junior Paleontologists

The National Park Service's Junior Paleontologist program seeks to engage young people in activities that allow them to discover the significance of fossils and the science of paleontology, and introduces them to the national park system and to the mission of the National Park Service.

Besides learning about Earth's history, ancient life, and past changes to climate and environments, Junior Paleontologists explore the ways paleontologists work to protect fossils found in more than 230 national park areas that preserve these scientific resources. This is a great way to prepare for the third annual National Fossil Day, taking place on Wednesday, October 16, during Earth Science Week 2013 (October 13-19).

The Junior Paleontologist Program is a part of the National Park Service's Junior Ranger Program, which aims to connect young people to their national parks. Download the Junior Paleontologist Activity Booklet for children ages 5 to 12 at <http://nature.nps.gov/geology/nationalfossilday/jrpaleo.cfm>.

From the NESTA E-News, September, 2013



World Water Monitoring Challenge

[World Water Monitoring Challenge](#) is an international education and outreach program that builds public awareness and involvement in protecting water resources around the world by engaging citizens to conduct basic monitoring of their local water bodies. In 2012, approximately 250,000 visits were made by participants to monitoring sites in 66 countries.

We challenge you to test the quality of your waterways (official World Water Monitoring Day is on September 18, but you can monitor your site any time through December 31), share your findings (results may be entered anytime prior to December 31 for inclusion in that year's annual World Water Monitoring Challenge [Year in Review](#) report), and protect our most precious resource!



Flame Challenge

Get your students involved in the 2013-2014 Flame Challenge immediately by encouraging them to submit questions for this year's challenge using the online form found here:

<https://docs.google.com/a/stonybrook.edu/spreadsheet/viewform?formkey=dHkyVDJQVjhFeW8tQU83aHNXUTdkdWc6MQ#gid=0>

Also, if you haven't registered your class for the 2013-2014 Flame Challenge, please visit the online registration form: <https://docs.google.com/forms/d/1BK86VvGBPCPp0TnGd3rNVjEmI2IEcY07RaXOiSyrtiA/viewform>.

Please note that even if you registered your class last year, you must re-register.

Getting your students to submit questions is a great opportunity to start the year off by motivating them to think about science in a fun way! Ask them what question they would want hundreds of scientists from all over the world to answer in this year's Flame Challenge? Send us your responses and their question could be chosen for this year's contest!

The Flame Challenge is an international contest, founded by actor Alan Alda, with the purpose of stimulating scientists to effectively communicate challenging scientific questions to an 11-year-old audience.



CLEAN - Climate and Energy Resources

Free, online, peer-reviewed teaching materials on climate and energy for grades 6-16 include activities, videos, and visualizations that are available for teachers through the Climate Literacy and Energy Awareness Network ([CLEAN](http://CLEAN.net)) portal. This collection features only teaching materials that have been hand-picked and peer-reviewed for scientific accuracy and classroom effectiveness by scientists and educators. CLEAN is funded through the NSF, NOAA, and the Department of Energy.

[Free, Vetted Online Climate and Energy Teaching Resources - Grades 6 - 16](#)

The CLEAN collection offers the following resources and support:

1. The [CLEAN search engine](#) directs you to annotations and links for 500+ vetted, online activities, videos, and visualizations on climate and energy for grades 6 - 16.
2. The CLEAN site provides guidance on [teaching climate](#) and [energy science](#) using a set of essential principles to frame the science and inform teaching strategies.
3. Join the vibrant [CLEAN Network](#) with updates on educational policies and science, discussions with experts, conference and workshop announcements, and weekly telecons (Tuesdays at 1 pm ET).

CLEAN: Share with others, and bookmark it for yourself! cleanet.org



Free Switch Energy Documentary

by *Richard Jones*

[Switch Energy](#) is offering **FREE** copies of a special Education Edition DVD to all primary and secondary school teachers and university professors.

The Switch Energy Project is a nonpartisan effort to build energy awareness and promote efficiency. The project includes a feature length documentary, the world's only [video library](#) dedicated to energy and a soon-to-be-released K-12 video and companion curriculum program co-developed by NEED.org. The trailer for Switch is [here](#).

The Switch Education Edition DVD is specially designed for classroom use and features the full documentary, chapters categorized by resource type and energy issue to pair with curriculum, as well as a Discussion and Learning Guide created with innovative ideas submitted and tested by teachers.

Shown at movie theaters and film festivals across the country, as well as at over 300 universities, Switch features exclusive interviews with the world's most renowned energy experts from government, industry and academia, as well as visits to the energy facilities never before seen on film.

Educators can [order a free copy here](#). If you wish to request a bulk order of free DVDs for a conference or teacher training session, please email: arcos@films.com.

From the NESTA E-News, September, 2013



Informed by Nature Online Science Fair

Encouraging Science Education...

The Informed by Nature (IBN) Online Science Fair is a stimulating, searchable, and socially engaging catalog of science fair projects, uploaded by grade 7-12 students who have participated in science fairs at the local level. An annual award is given for the project that has engaged the most in the online learning environment, sharing the joy of science with the world.

The Informed by Nature [Online Science Fair](#) is a part of Informed by Nature's goal to further blended learning by using technology to engage young science learners and encourage ongoing involvement in the world of science learning and discovery.



Editor's note: Informed by Nature has much more to offer. Check out their website.

BLANK PARK ZOO

The Blank Park Zoo would once again like to invite educators to workshops to be held at Blank Park Zoo on the dates listed below. The workshops are good for one hour of Drake University or license renewal credit and teachers will be eligible to schedule a free classroom animal program. Our education department is willing and able to travel to districts across the state with our classroom programs (animals included!).

Participants in our workshops engage in relevant inquiry investigations that are connected to the Iowa Core and Next Generation Science Standards, learn research-based instructional practices, and gain knowledge and ideas that will be useful in their classrooms. Lessons are flexible, allowing teachers to adjust for their students' abilities; and relate to all age groups in several subject areas (science, literacy, mathematics, social studies, and the arts).

Cost: \$15.00 to help cover materials and meals, payable at workshop; credit fees if taking for credit

Included in workshop: Dinner on Friday night and lunch on Saturday, coffee and rolls on Saturday morning, materials for teachers to utilize in their classrooms, and a scholarship that will pay for a classroom visit.

Workshops will run Friday from 4-9:30 and Saturday from 8 – 5:30. Descriptions are found on our [website](#).

Workshops and Dates:

Conservation: People and Animals – November 8/9, 2013

Wild Genes – November 22/23, 2013

Climate Change: Wildlife and Wildlands – January 24/25, 2014

Habitats and Adaptations – February 21/22, 2014

Wonders of Water – April 18/19, 2014

Registration forms may be found on the zoo website – www.blankparkzoo.com under Education/Just for Teachers. They may be submitted electronically.

Participants should contact Kathy McKee at 515-974-2557 or kamckee@blankparkzoo.net if they have any questions.

NGSS App

Get the Free Next Generation Science Standards App

NSTA is excited to announce, in partnership with [MasteryConnect](#), a free app for the Next Generation Science Standards.

MasteryConnect, the makers of the most downloaded app for the Common Core (with over 700,000 downloads), has created a great way to get the standards in the palm of your hand ... through an app on your tablet or mobile device.

The Next Generation Science Standards app gives you multiple ways to view the standards including DCI and Topic arrangements, and also includes convenient search functionality. The app also makes referencing standards in the Common Core simple by providing a linkage between the NGSS App and MasteryConnect's Common Core App.

As part of the partnership with MasteryConnect, NSTA is providing additional free resources within the app, including several articles from NSTA's peer reviewed journals, and free chapters from its line of NGSS-related titles, including *The NSTA Reader's Guide to the Next Generation Science Standards* and *Science for the Next Generation: Preparing for the New Standards*.

You can download the Next Generation Science Standards app (as well as MasteryConnect's other free apps) by searching "MasteryConnect" or "Next Generation Science Standards" in your app store or visiting the [iOS Store](#) or [Android Marketplace](#). Look for the app to be available in the Windows Store soon.



From the NSTA Express, August 12, 2013

The Space Place

Test your knowledge in the latest game from [NASA's Space Place](#) - Solar Tricktionary! Pick the correct definition to a term or concept about our Sun from a list of four. Hilariously incorrect answers allow players to learn heliophysics terms while still being entertained. Visit <http://spaceplace.nasa.gov/solar-tricktionary/> to play.

World of 7 Billion Video Contest

Bring technology and creativity into your high school science classes by incorporating the World of 7 Billion video contest into your syllabi. The challenge for your students - Considering the interdependence of people and the planet, create a short (60 seconds or less) video that illustrates the connection between population growth and one of the following global challenges: **climate change, global poverty, or water sustainability.**

Students can win up to \$1,000, and participating teachers can receive free curriculum resources. The contest deadline is February 21, 2014 and all details can be found at www.Worldof7Billion.org.



NanoSpace

NanoSpace Offers Teachers Fun, Interactive Games Designed to Increase Science Literacy

World-renowned professors and scientists from Rensselaer Polytechnic Institute, creators of **The Molecularium® Project** (www.molecularium.com), have launched **NanoSpace** (<http://nanospace.molecularium.com>), a website designed to teach kids about the nanoscale world of atoms and molecules. Teachers will find that the virtual scientific amusement park offers them fun activities and games that they can incorporate in the classroom.

Wondering how to do this? It's easy. NanoSpace content includes the periodic table, microscopes, and molecular structures and formulas. Just visit the Guide to NanoSpace: www.molecularium.com/educators.html to find just a few tips on how to incorporate NanoSpace activities in your classroom. Additional discovery-based lessons may also be downloaded from the website's Educator Resources tab.

These unique, online science resources are designed to supplement scarce school-based curricula and teach children through enjoyable interactions. The activities in NanoSpace teach and reinforce the National Science Education Standards, just as do all other Molecularium® Project programs. In addition to the Teachers Guides, which outline measurable goals related to these standards, free educator resources for the Molecularium® Project include lesson plans for grades K-4 and 5-8, crossword puzzles, songs, quizzes, and posters.



NOVA Spark News

Inspire Interests in STEM Careers with NOVA

This month, spark your students' interest in STEM careers with new resources from NOVA:

- Check out our newest video resources from the Secret Life of Scientists & Engineers featuring an [actress](#) with her Ph.D. in neuroscience, a [mathematician](#) with a serious art career, and more.
- Encourage your students to participate in our "[Ask a Scientist](#)" events surrounding NOVA's Cloud Lab. They'll have the opportunity to ask science professionals about their work and their careers.
- Read our latest *Engaging Science* [blog post](#) and hear one scientist's personal story about what inspired her to study ice sheets in Greenland and Antarctica.

Join the conversation on [Facebook](#) and [Twitter](#), or visit [NOVA Education](#) to tap into a wealth of NOVA video clips, interactives, and activities.



NOVA Education

Nova Education Has a New Home on PBS LearningMedia

NOVA Education resources have a new home on [PBS LearningMedia](#) as Teachers' Domain completes its transition to this new platform. All of the same resources you know and love will be available with streamlined usability on this new site. You can still visit [NOVA Education](#) to search for resources, read blog posts, find full programs, and more. We hope that the new platform on PBS LearningMedia will make it even easier for you to find resources to bring science to life in your classroom.

Make sure that you start the school year ready to use PBS LearningMedia by verifying your account information, or creating a new account. Follow these simple steps:

1. Go to [PBS LearningMedia](#)
2. Click Login
3. Under Returning Guests, enter the email address and password you use for Teacher' Domain.
4. If your account cannot be located, click Create Account under New Guests, and create a new account.
5. Recreate your folders. This is a great opportunity to add new content.

If you need help with transitioning from Teachers' Domain, contact td_contact@wgbh.org. And now you're ready to use PBS LearningMedia in your classroom!

How to Hunt for Your Very Own Supernova

by Dr. Ethan Siegle

In our day-to-day lives, stars seem like the most fixed and unchanging of all the night sky objects. Shining relentlessly and constantly for billions of years, it's only the long-term motion of these individual nuclear furnaces and our own motion through the cosmos that results in the most minute, barely-perceptible changes.

Unless, that is, you're talking about a star reaching the end of its life. A star like our Sun will burn through all the hydrogen in its core after approximately 10 billion years, after which the core contracts and heats up, and the heavier element helium begins to fuse. About a quarter of all stars are massive enough that they'll reach this giant stage, but the *most* massive ones -- only about 0.1% of all stars -- will continue to fuse leaner elements past carbon, oxygen, neon, magnesium, silicon, sulphur and all the way up to iron, cobalt, and, nickel in their core. For the rare ultra-massive stars that make it this far, their cores become so massive that they're unstable against gravitational collapse. When

they run out of fuel, the core implodes.

The intruding matter approaches the center of the star, then rebounds and bounces outwards, creating a shockwave that eventually causes what we see as a core-collapse supernova, the most common type of supernova in the Universe! These occur only a few times a century in most galaxies, but because it's the most massive, hottest, shortest-lived stars that create these core-collapse supernovae, we can increase our odds of finding one by watching the most actively star-forming galaxies very closely. Want to maximize your chances of finding one for yourself? Here's how.

Pick a galaxy in the process of a major merger, and get to know it. Learn where the foreground stars are, where the apparent bright spots are, what its distinctive features are. If a supernova occurs, it will appear first as a barely perceptible bright spot that wasn't there before, and it will quickly brighten over a few nights. If

you find what appears to be a "new star" in one of these galaxies and it checks out, report it *immediately*; you just might have discovered a new supernova!

This is one of the few cutting-edge astronomical discoveries well-suited to amateurs; Australian Robert Evans holds the all-time record with 42 (and counting) original supernova discoveries. If you ever find one for yourself, you'll have seen an exploding star whose light traveled millions of light-years across the Universe right to you, and you'll be the *very first* person who's ever seen it!

Read more about the evolution and ultimate fate of the stars in our universe: <http://science.nasa.gov/astrophysics/focus-areas/how-do-stars-form-and-evolve/>.